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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,396	03/17/2005	Hans-Joachim Mussig	536-9.13	5145

4955 7590 09/20/2005

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EXAMINER

HARRISON, MONICA D

ART UNIT PAPER NUMBER

2813

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/520,396

Applicant(s)

MUSSIG, HANS-JOACHIM

Examiner

Monica D. Harrison

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/4/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 7, 8 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Maniar et al (5,356,833).

2. Regarding claim 1, Maniar et al discloses a semiconductor capacitor (Figure 11, reference 110) including a first capacitor electrode (Figure 11, reference 111), a second capacitor electrode (Figure 11, reference 113) and a capacitor dielectric (Figure 11, reference 112) which is arranged between the two capacitor electrodes and which includes praseodymium oxide (column 3, lines 48-59), characterized in that the second capacitor electrode contains praseodymium silicide at least in the boundary region in relation to the capacitor dielectric (column 4, lines 23-33).

3. Regarding claim 2, Maniar et al discloses wherein the second capacitor electrode consists of praseodymium silicide (column 4, lines 23-33).

4. Regarding claim 3, Maniar et al discloses wherein the first capacitor electrode includes silicon (Figure 11, reference 10).

5. Regarding claim 7, Maniar et al discloses a MOSFET comprising a semiconductor substrate (Figure 11, reference 10), a gate dielectric (Figure 11, reference 112), a gate electrode (Figure 11, reference 111) and a semiconductor capacitor (Figure 11, reference 110) as set forth in one of the preceding claims, wherein the first capacitor electrode is formed by the semiconductor substrate (Figure 11, reference 111)), the second capacitor electrode by the gate electrode (Figure 11, reference 113) and the capacitor dielectric by the gate dielectric (Figure 11, reference 112).

6. Regarding claim 8, Maniar et al discloses a process for the production of a semiconductor capacitor which has a praseodymium oxide-bearing dielectric, characterized by a step of producing a praseodymium silicide layer on the praseodymium oxide-bearing layer (column 3, lines 48-68 thru column 4, lines 1-40).

7. Regarding claim 9, Maniar et al discloses wherein the praseodymium silicide layer is deposited out of the gaseous phase (column 3, lines 48-68 thru column 4, lines 1-40).

8. Regarding claim 10, Maniar et al discloses wherein the praseodymium silicide layer is produced by thermal conversion of praseodymium oxide by means of local energy input into regions near the surface of the praseodymium oxide-bearing layer (column 3, lines 21-68 thru column 4, lines 1-40).

9. Regarding claim 12, Maniar et al discloses a process for the production of a praseodymium silicide layer on a praseodymium oxide-bearing layer wherein the praseodymium silicide layer is produced by thermal conversion of praseodymium oxide by means of local energy input into regions near the surface of the praseodymium oxide-bearing layer (column 3, lines 48-68 thru column 4, lines 1-40).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maniar et al (5,356,833) in view of Forbes et al (US 2005/0145959 A1).

10. Maniar et al discloses all above claimed subject matter except the first capacitor electrode containing a silicon-germanium alloy.

Forbes et al discloses first capacitor electrode containing a silicon-germanium alloy (pg.5, paragraph 0046).

Since Maniar et al and Forbes et al are both from the same field of endeavor, the purpose disclosed by Maniar et al would have been recognized in the pertinent art of Forbes et al.

It is obvious, at the time the invention was made, for one having ordinary skill in the art, to modify Maniar et al with teachings of Forbes et al for the purpose of forming a transistor gate electrode that may be formed by different materials so that the work functions of the electrodes may be tailored.

Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maniar et al (5,356,833) and Forbes et al (US 2005/0145959 A1) in view of Mussig et al (XP-001189099).

11. Regarding claims 5 and 13 Maniar et al does not disclose a mixed oxide layer (7) in the form of $(\text{PrO}_2)_x(\text{SiO}_2)_{1-x}$ is present between the capacitor dielectric and the first capacitor electrode, wherein x can assume values in the range of greater than zero and less than one.

Mussig et al discloses a mixed oxide layer (7) in the form of $(\text{PrO}_2)_x(\text{SiO}_2)_{1-x}$ is present between the capacitor dielectric and the first capacitor electrode, wherein x can assume values in the range of greater than zero and less than one (pg. 164, column 2, 1st paragraph).

Since Maniar et al, Forbes et al and Mussig et al are all from the same field of endeavor, the purpose disclosed by Mussig et al would have been recognized in the pertinent art of Maniar et al and Forbes et al.

It is obvious, at the time the invention was made, for one having ordinary skill in the art, to modify Maniar et al and Forbes et al with the teachings of Mussig et al, for the purpose of making the system containing praseodymium oxide stable.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maniar et al (5,356,833) in view of Shimizu (5,753,541).

12. Maniar et al discloses all above independent claimed subject matter except wherein the local energy output is effected by means of a laser.

Shimizu discloses a laser (Figure 2, reference 10).

Since Maniar et al and Shimizu are both from the same field of endeavor, the purpose disclosed by Shimizu would have been recognized as the pertinent art of Maniar et al.

It is obvious, at the time the invention was made, for one having ordinary skill in the art, to modify Maniar et al with the teachings of Shimizu for the purpose of using a laser light in order to irradiate the oxide film.

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Conclusion

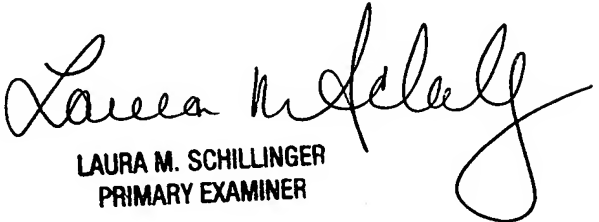
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica D. Harrison whose telephone number is 571-272-1959. The examiner can normally be reached on M-F 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monica D. Harrison
AU 2813

mdh
August 30, 2005


LAURA M. SCHILLINGER
PRIMARY EXAMINER